

IN THE CLAIMS

The pending claims, including amended claims, are as follows:

1. (Previously presented) A gas turbine plant comprising:
a circuit including a compressor, a combustion chamber, a turbine and at least one heat sink, the gas turbine plant being operated with (1) a working medium in the form of a carbon dioxide/water mixture, (2) a hydrocarbon reacting as fuel with oxygen in the combustion chamber, and (3) excess carbon dioxide and water thereby occurring being tapped from the circuit at a suitable point;
wherein the compressor and the turbine each have a rotor and a casing between which flow ducts run for the working medium, moving blades arranged on the rotor, and guide blade cascades arranged in the flow ducts;
wherein the rotor and casing of at least one of the compressor and the turbine largely correspond to a rotor and a casing respectively of a compressor designed for air as the working medium or respectively of a turbine designed for air as the working medium; and
wherein in at least one of the compressor and the turbine in the circuit, at least one selected from the group consisting of the flow ducts, the moving blades, and the guide blade cascades is adapted to accommodate the expansion behavior of the working medium by modification selected from the group consisting of radial obstacles, annular obstacles, and size adjustment.
2. (Previously presented) A gas turbine plant comprising:
a circuit including a compressor, a combustion chamber, a turbine and at least one heat sink, the gas turbine plant being operated with (1) a working medium in the form of a carbon dioxide/water mixture, (2) a hydrocarbon reacting as fuel with oxygen in the combustion chamber, and (3) excess carbon dioxide and water thereby occurring being tapped from the circuit at a suitable point;
wherein the compressor and the turbine each have a rotor and a casing between which flow ducts run for the working medium, moving blades arranged on the rotor, and guide blade cascades arranged in the flow ducts;
wherein the rotor and casing of at least one of the compressor and the turbine largely correspond to a rotor and a casing respectively of a compressor designed for air as the working medium or respectively of a turbine designed for air as the working medium; and

wherein in at least one of the compressor and the turbine in the circuit, expansion behavior of the working medium is accommodated by reductions of free flow cross-sections on a high-pressure side thereof by blocking some of the flow ducts in the guide blade cascade in the form of blocked sectors.

3. (Previously presented) A gas turbine plant comprising:

a circuit including a compressor, a combustion chamber, a turbine and at least one heat sink, the gas turbine plant being operated with (1) a working medium in the form of a carbon dioxide/water mixture, (2) a hydrocarbon reacting as fuel with oxygen in the combustion chamber, and (3) excess carbon dioxide and water thereby occurring being tapped from the circuit at a suitable point;

wherein the compressor and the turbine each have a rotor and a casing between which flow ducts run for the working medium, moving blades arranged on the rotor, and guide blade cascades arranged in the flow ducts;

wherein the rotor and casing of at least one of the compressor and the turbine largely correspond to a rotor and a casing respectively of a compressor designed for air as the working medium or respectively of a turbine designed for air as the working medium; and

wherein in at least one of the compressor and the turbine in the circuit, expansion behavior of the working medium is accommodated by reductions in free flow cross-sections on a high-pressure side thereof by inserting annular flow obstacles in the guide blade cascades.

4. (Original) The gas turbine plant of claim 1, wherein the guide blade cascades are adjustable and free flow cross-sections on a high-pressure side of at least one of the compressor and turbine are reduced by the guide blade cascades.

5. (Canceled)

6. (Previously presented) The gas turbine plant of claim 1, wherein adjustable guide blade cascades are provided in at least one of the compressor and turbine disposed to reduce free flow cross sections therein in order to compensate for variations in thermodynamic properties of the working medium, said variations being caused by inert gases.

7. (Original) The gas turbine plant of claim 1, wherein the heat sink is designed for the generation of steam, and at least one part stream of steam generated therefrom is supplied for cooling of components of the turbine that are subjected to thermal load.

8. (Original) The gas turbine plant of claim 1, wherein the heat sink is designed for generating steam for operating a steam turbine, and a part stream of steam generated therefrom is supplied for cooling of components of the turbine that are subjected to thermal load.

9. (Original) The gas turbine plant of claim 1, wherein means for condensing the working medium by discharging heat are provided, and a pump is provided instead of the compressor.

10. (Previously presented) A gas turbine plant comprising:
a circuit including a compressor, a combustion chamber, a turbine and at least one heat sink, the gas turbine plant being operated with (1) a working medium in the form of a carbon dioxide/water mixture, (2) a hydrocarbon reacting as fuel with oxygen in the combustion chamber, and (3) excess carbon dioxide and water being discharged from the circuit at a point downstream from the compressor;

wherein the compressor and turbine each have a rotor and a casing with flow ducts for the working medium running therebetween, moving blades disposed on the rotor, and guide blade cascades disposed in the flow ducts;

wherein the rotor and casing of at least one of the compressor and the turbine are configured and dimensioned for use with an alternate working medium in the form of air; and

wherein expansion behavior of the carbon dioxide/water mixture in at least one of the compressor and turbine is accommodated by adjustment of at least one selected from the group consisting of the flow ducts, the moving blades, and the guide blade cascades, the adjustment selected from the group consisting of radial obstacles, annular obstacles, and size modification.

11. (Previously presented) A gas turbine plant comprising:

a circuit including a compressor, a combustion chamber, a turbine and at least one heat sink, the gas turbine plant being operated with (1) a working medium in the form of a carbon dioxide/water mixture, (2) a hydrocarbon reacting as fuel with oxygen in the combustion chamber, and (3) excess carbon dioxide and water being discharged from the circuit at a point downstream from the compressor;

wherein the compressor and turbine each have a rotor and a casing with flow ducts for the working medium running therebetween, moving blades disposed on the rotor, and guide blade cascades disposed in the flow ducts;

wherein the rotor and casing of at least one of the compressor and the turbine are configured and dimensioned for use with an alternate working medium in the form of air; and

wherein expansion behavior of the carbon dioxide/water mixture in at least one of the compressor and turbine is accommodated by at least partially blocking at least some of the flow ducts.

12. (Previously presented) A gas turbine plant comprising:

a circuit including a compressor, a combustion chamber, a turbine and at least one heat sink, the gas turbine plant being operated with (1) a working medium in the form of a carbon dioxide/water mixture, (2) a hydrocarbon reacting as fuel with oxygen in the combustion chamber, and (3) excess carbon dioxide and water being discharged from the circuit at a point downstream from the compressor;

wherein the compressor and turbine each have a rotor and a casing with flow ducts for the working medium running therebetween, moving blades disposed on the rotor, and guide blade cascades disposed in the flow ducts;

wherein the rotor and casing of at least one of the compressor and the turbine are configured and dimensioned for use with an alternate working medium in the form of air; and

wherein expansion behavior of the carbon dioxide/water mixture in at least one of the compressor and turbine is accommodated by the guide blade cascades comprising blocked sectors.

13. (Previously presented) A gas turbine plant comprising:

a circuit including a compressor, a combustion chamber, a turbine and at least one heat sink, the gas turbine plant being operated with (1) a working medium in the form of a carbon dioxide/water mixture, (2) a hydrocarbon reacting as fuel with oxygen in the combustion chamber, and (3) excess carbon dioxide and water being discharged from the circuit at a point downstream from the compressor;

wherein the compressor and turbine each have a rotor and a casing with flow ducts for the working medium running therebetween, moving blades disposed on the rotor, and guide blade cascades disposed in the flow ducts;

wherein the rotor and casing of at least one of the compressor and the turbine are configured and dimensioned for use with an alternate working medium in the form of air; and

wherein expansion behavior of the carbon dioxide/water mixture in at least one of the compressor and turbine is accommodated by providing annular flow obstacles in the guide blade cascades.

14. (Previously presented) A gas turbine plant comprising:

a circuit including a compressor, a combustion chamber, a turbine and at least one heat sink, the gas turbine plant being operated with (1) a working medium in the form of a carbon dioxide/water mixture, (2) a hydrocarbon reacting as fuel with oxygen in the combustion chamber, and (3) excess carbon dioxide and water being discharged from the circuit at a point downstream from the compressor;

wherein the compressor and turbine each have a rotor and a casing with flow ducts for the working medium running therebetween, moving blades disposed on the rotor, and guide blade cascades disposed in the flow ducts;

wherein the rotor and casing of at least one of the compressor and the turbine are configured and dimensioned for use with an alternate working medium in the form of air; and

wherein expansion behavior of the carbon dioxide/water mixture in at least one of the compressor and turbine is accommodated by at least partially blocking free flow cross-sections on a high-pressure side thereof.

15. (Previously presented) The gas turbine plant of claim 10, wherein the guide blade cascades comprise adjustable guide blades disposed to reduce free flow cross sections in at least one of the compressor and turbine.

16. (Previously presented) A gas turbine plant comprising:
a compressor;
a combustion chamber;
a multi-stage turbine arranged with individual stages having progressively increasing flow cross-sections;
at least one heat sink;
a working medium in the form of a carbon dioxide/water mixture; and
a hydrocarbon reacting as fuel with oxygen in a combustion chamber;
wherein excess carbon dioxide and water is discharged downstream from the compressor, and
wherein a rotor and a casing of at least one of the compressor and the turbine are configured and dimensioned for use with an alternate working medium in the form of air.

17. (Original) The gas turbine plant of claim 16, further comprising flow ducts in at least one of the compressor and turbine that are at least partially blocked.

18. (Original) The gas turbine plant of claim 16, further comprising guide blade cascades in at least one of the compressor and turbine with blocked sectors.

19. (Previously presented) The gas turbine plant of claim 16, further comprising guide blade cascades in at least one of the compressor and turbine with adjustable guide blades disposed to reduce free flow cross sections thereof.

20. (Original) The gas turbine plant of claim 16, wherein flow cross-sections on a high-pressure side of the compressor are at least partially blocked.

21. (Previously presented) A gas turbine plant comprising:
a compressor;
a combustion chamber;

a multi-stage turbine arranged with a later stage having greater flow cross-section than an earlier stage;

at least one heat sink;

a working medium in the form of a carbon dioxide/water mixture; and

a hydrocarbon reacting as fuel with oxygen in a combustion chamber;

wherein excess carbon dioxide and water is discharged downstream from the compressor, and

wherein a rotor and a casing of at least one of the compressor and the turbine are configured and dimensioned for use with an alternate working medium in the form of air.

22. (New) A method of operating a gas turbine plant comprising:

providing a compressor and a turbine, with a rotor and a casing of at least one of the compressor and the turbine being configured and dimensioned for use with a working medium of air;

adapting at least one of the compressor and turbine to work with an alternate working medium of a carbon dioxide/water mixture, wherein in at least one of the compressor and the turbine, at least one selected from the group consisting of the flow ducts, the moving blades, and the guide blade cascades is adapted to accommodate expansion behavior of the alternate working medium by modification selected from the group consisting of radial obstacles, annular obstacles, and size adjustment;

combusting a fuel;

delivering the alternate working medium to the turbine.